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Sub-Committee of Experts on the Transport of Dangerous Goods

Fifty-third session
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Item 3 of the provisional agenda
Listing, classification and packaging

Maximum permitted stacking load of IBC

Transmitted by the International Confederation of Plastics Packaging Manufacturers (ICPP)*

Introduction

1. With informal document INF 22 (52nd session) in November 2017, ICPP raised the issue of a misunderstanding in 6.5.2.2.2 regarding what constitutes transportation of an IBC when considering the use of the symbol in figure 6.5.1, or figure 6.5.2. Taking into account the comments of the discussion in November the expert from Sweden and ICPP have prepared the following proposal.

2. The first sentence of 6.5.2.2.2 reads as follows: "The maximum permitted stacking load applicable when the IBC is in use shall be displayed on a symbol as shown in Figure 6.5.1 or Figure 6.5.2.". The phrase "in use" in conjunction with stacking of IBCs has been occasionally misinterpreted in practice, the restriction for stacking of IBCs displayed on the symbol would be also relevant for such activities of IBCs, e.g. en route warehousing. To reduce such misinterpretations in future, it is proposed to delete the phrase "when the IBC is in use".

* In accordance with the programme of work of the Sub-Committee for 2017–2018 approved by the Committee at its eighth session (see ST/SG/AC.10/C.3/100, paragraph 98 and ST/SG/AC.10/44, para. 14).

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1804928

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Proposal

3. Amend the first sentence of 6.5.2.2.2 to read as follows: "The maximum permitted stacking load shall be displayed on a symbol as shown in Figure 6.5.1 or Figure 6.5.2."

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Listing, classification and packaging

Entries assigned special provision 117 and 123

Transmitted by the Council on Safe Transportation of Hazardous Articles (COSTHA)*

Introduction

1. COSTHA has identified eight (8) entries in the Dangerous Goods Table where the application of special provision (SP) 117 and/or 123 should be reviewed and modified.

2. SP 117 is used in the Model Regulations to indicate a particular entry is regulated only when consigned for sea transport, while SP 123 is used to indicate a particular entry is regulated when consigned by air or sea. These special provisions are useful when considering multimodal shipments where a material may be regulated while in transport by one mode yet unrestricted while in transport by another mode.

3. In reviewing the Dangerous Goods List, SP 117 is assigned to seven (7) entries, indicating the materials are regulated only when transported by sea. However, when these entries are compared to the Dangerous Goods List in the ICAO Technical Instructions, six (6) of them are identified as forbidden for transport by air.

* In accordance with the programme of work of the Sub-Committee for 2017–2018 approved by the Committee at its eighth session (see ST/SG/AC.10/C.3/100, paragraph 98 and ST/SG/AC.10/44, para. 14).

Discussion

4. The seven entries that are assigned SP117 are tabulated below. Additionally, an indication of whether the material is permitted for air transport per the ICAO Technical Instructions is indicated:

UN Number	Proper shipping name	Regulated by Air?
UN1372	FIBRES, ANIMAL or FIBRES, VEGETABLE burnt, wet or damp	Yes – Forbidden
UN1387	WOOL WASTE, WET	Yes – Forbidden
UN1856	RAGS, OILY	Yes – Forbidden
UN1857	TEXTILE WASTE, WET	Yes – Forbidden
UN2216	FISHMEAL (FISH SCRAP), STABILIZED	Yes – Forbidden
UN3360	FIBRES, VEGETABLE, DRY	Yes – Forbidden
UN3496	BATTERIES, NICKEL METAL HYDRIDE	? – ICAO Special Provision A199

5. Six (6) of the entries are forbidden for transport by air. The seventh entry (UN3496) has minimal regulatory requirements by air. However, these requirements include:

(a) packaging the batteries to prevent:

(i) Short circuit, and

(ii) Unintentional activation.

(b) Inclusion of the words "Not restricted" and the special provision number "A199" on the air waybill when an air waybill is used.

6. It can be argued whether UN3496 is regulated for transport by air or not. However, the inability to consign and transport under the ICAO Technical Instructions the first six entries listed above certainly suggests the materials are regulated for transport by air.

7. COSTHA believes the indication in the Dangerous Goods List in the Model Regulations that the materials are regulated only by sea is a misleading and potentially unsafe approach. Instead, SP 123 should replace SP 117 for the first six entries noted above.

8. In addition, it was noted by Germany that the entries UN3166 and UN3171 have both now been included in the ADR/RID. Therefore, it is no longer appropriate for SP123 to be assigned to these entries.

Proposal

9. COSTHA proposes to revise the application of SP 117 and SP 123 to the following entries, as follows:

UN No.	Name and description	Special provisions
(1)	(2)	(6)
UN1372	FIBRES, ANIMAL or FIBRES, VEGETABLE burnt, wet or damp	~~117~~ 123
UN1387	WOOL WASTE, WET	~~117~~ 123
UN1856	RAGS, OILY	29 ~~117~~ 123
UN1857	TEXTILE WASTE, WET	~~117~~ 123
UN2216	FISHMEAL (FISH SCRAP), STABILIZED	29 ~~117~~ 123 300 308
UN3166	VEHICLE, FLAMMABLE GAS POWERED or VEHICLE, FLAMMABLE LIUQID POWERED or VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED	~~123~~ 356 388
UN3171	BATTERY-POWERED VEHICLE or BATTERY-POWERED EQUIPMENT	~~123~~ 388
UN3360	FIBRES, VEGETABLE, DRY	29 ~~117~~ 123 299

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Organic peroxides: new formulations to be listed in 2.5.3.2.4 and IBC 520

Transmitted by the expert from the European Chemical Industry Council (CEFIC)*

Introduction

1. Since a few new peroxides and formulations have become commercially available, there is a need to update the list under 2.5.3.2.4 and packing instruction IBC520. A list of new products, proposed classification, the accompanying competent authority approval references and a summary of the supporting test data are given in Annex to this proposal.

Proposals

2. CEFIC proposes to include one new entry in the list of currently assigned organic peroxides under 2.5.3.2.4 and two new entries to be included in packing instruction IBC520, as follows:

* In accordance with the programme of work of the Sub-Committee for 2017–2018 approved by the Committee at its eighth session (see ST/SG/AC.10/C.3/100, paragraph 98 and ST/SG/AC.10/44, para. 14).

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Proposed amendments to the list of currently assigned organic peroxides under 2.5.3.2.4

Change the following entry as indicated

ORGANIC PEROXIDE	Concentration (%)	Diluent type A (%)	Diluent type B 1) (%)	Inert solid (%)	Water	Packing Method	Control temperature (°C)	Emergency temperature (°C)	Number (Generic entry)	Subsidiary risks and remarks
Change:										
DI-(4-TERT-BUTYL CYCLO HEXYL) PEROXYDI CARBONATE	≤ 42 as a paste					~~OP7~~ OP8	35	40	~~3116~~ 3118	

Proposed amendments to 4.1.4.2, Packing instruction IBC520

Add the following entries under UN3119 as indicated

UN No.	Organic peroxide	Type of IBC	Maximum quantity (litres)	Control temperature	Emergency Temperature
3119	**ORGANIC PEROXIDE TYPE F, LIQUID, TEMPERATURE CONTROLLED**				
	ADD NEW entries:				
	tert-Amyl peroxypivalate, not more than 42% as a stable dispersion in water	31HA1	1000	0 °C	+10 °C
	tert-Butyl peroxypivalate, not more than 42% in a diluent type A	31HA1 31A	1000 1250	10 °C 10 °C	15 °C 15 °C

Annex

Test results of new organic peroxides and formulations to be added/amended (2.5.3.2.4 or IBC520)

No	Product	packaging	UN	*Detonation*	*P/T / C.1*	*Deflagration / C.2*	*Koenen/ E.1*	*DPVT/ E.2*	*(mod) Trauzl F.3 or F.4 or F5*	*SADT (H.3 or H.4)*	Competent Authority approval number
1	Di-(4-tert-butylcyclohexyl) peroxydicarbonate, ≤ 42% as a paste	OP8	3118	Test A.6 No	<2170kPa, No	0.33 mm/s, No	< 1mm ("O"), No	<1.0 mm (10g), Low	F.4 4.6 ml Low	H.4 45 °C (400ml)	NL TNO 16 EM/0225
2	tert-Amyl peroxypivalate, not more than 42% as a stable dispersion in water	OP8 31HA1	3119	Test A.1 (77%) No	<2170kPa, No	0.0 mm/s, No	<1.0mm ("O"), No	<1.0 mm (10g), Low	F.4 1.6 ml, No	H.3, isothermal calorimetry 20°C,	NL TNO 17EM/0337
3	tert-Butyl peroxypivalate, not more than 42% in a diluent type A	OP8 31HA1 31A	3119	Test A.1 (75%) No	220 ms (75%), Yes slowly	0.08 mm/s (75%) N0	<1.0mm ("A") (50%) Low	<3.5 mm (10g) (50%) Low	F.5 10.5 J/g (55%) Low	H.3 isothermal calorimetry 25°C	NL TNO 8DV3/2130 (IBC 31HA1) NL TNO 6DV3/1071 (IBC 31A)

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Listing, classification and packing

Revised OECD Test Guideline 431 allowing sub-categorisation for skin corrosion

Transmitted by the European Union*

Introduction

1. OECD Test Guideline (TG) 431 "In vitro Skin Corrosion: Human Skin Model Test" was updated to introduce sub-categorisation for skin corrosion and adopted by the OECD in 2013 and further revised in 2014, 2015 and 2016, as TG 431 "In vitro skin corrosion: reconstructed human epidermis (RHE) test method". The in vitro methods included in TG 431 can now discriminate between GHS sub-category 1A and sub-category 1B/C. Discrimination between skin corrosive sub-categories 1B and 1C was not possible to introduce, due to the limited set of well-known in vivo corrosive sub-category 1C chemicals against which to validate the in vitro method results.

2. The main reason to introduce sub-categorisation in TG 431 was to avoid general classification in GHS category 1, which probably would inspire further in vivo testing to rule out a category 1A (corresponding to packing group I in transport of dangerous goods regulations).

* In accordance with the programme of work of the Sub-Committee for 2017-2018 approved by the Committee at its eighth session (see ST/SG/AC.10/C.3/100, paragraph 98 and ST/SG/AC.10/44, paragraph 14)

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3. The categorisation referred to is based on the classification criteria set out in the GHS, Rev. 7 (Table 3.2.1):

	Criteria
Category 1	Destruction of skin tissue, namely, visible necrosis through the epidermis and into the dermis, in at least one tested animal after exposure ≤ 4 h
Sub-category 1A	Corrosive responses in at least one animal following exposure ≤ 3 min during an observation period ≤ 1 h
Sub-category 1B	Corrosive responses in at least one animal following exposure > 3 min and ≤ 1 h and observations ≤ 14 days
Sub-category 1C	Corrosive responses in at least one animal after exposures > 1 h and ≤ 4 h and observations ≤ 14 days

4. The corresponding assignment of packing groups in the UN Model Regulations Rev. 20, is described in Table 2.8.3.4 for Class 8, corrosive substances:

Packing Group	**Exposure Time**	**Observation Period**	**Effect**
I	≤ 3 min	≤ 60 min	Irreversible damage of intact skin
II	> 3 min ≤ 1 h	≤ 14 d	Irreversible damage of intact skin
III	> 1 h ≤ 4 h	≤ 14 d	Irreversible damage of intact skin
III	-	-	Corrosion rate on either steel or aluminium surfaces exceeding 6.25 mm a year at a test temperature of 55°C when tested on both materials

5. According to the GHS, corrosive substances should be classified in Category 1 where sub-categorisation is not required by the competent authority or where data is not sufficient. The sub-categorisation is not usually implemented by any competent authority because of use-and-supply concern, as skin contact should be avoided for all substances classified as corrosive (Category 1). The GHS sub-classification is rather originating from the necessity to assign different packing groups to guarantee safe transport. For skin corrosion the packing group I, II and III corresponds to GHS sub-category 1A, 1B and 1C.

6. The OECD Guidance Document No. 203 "*New Guidance Document on an Integrated Approach on Testing and Assessment (IATA) for skin corrosion and irritation*" states at the end of page 28, the following:

> *"OECD TG 431 also allows for the sub-categorisation of corrosive chemicals into Cat. 1A or Cat. 1B-and-1C but does not permit the distinction of the latter into Cat. 1B and Cat. 1C. It is important to note however that the protocol and prediction model of the EpiSkinTM test method permits subcategorization of corrosive chemicals into the three Categories 1A, 1B and 1C, but its ability to discriminate between Categories 1B and 1C was never formally evaluated/validated due to the lack of high quality reference in vivo data against which to benchmark the in vitro results (Fentem et al. 1998, Alépée et al. 2014a). This method may in some cases nevertheless be considered for this purpose before any in vivo testing is performed if the result 1B or1C is considered in a weight of evidence approach (see Modules 5a,*

below). If this is not possible a cautious default classification as 1B if OECD TG431 results in 1B/1C could be decided."

7. For safe transport it makes a major difference if the substance is in packing group I compared II/III. However the difference if a substance is classified in packing group II or III is usually of less concern. It is therefore suggested, based on the revision of TG 431, to make it possible to classify in packing group I based on TG431, and in case it is not possible to discriminate between packing group II and III based on TG 431, allow for classification in packing group II rather than perform further *in vivo* testing. It could also be considered to apply the EpiSkinT^{M} results to distinguish between packing group II and III, as mentioned above.

Proposal

8. Based on this discussion, the relevant text from the UN Model Regulations Rev. 20 could be revised as follows (stricken out text is deleted, bold italized text is added):

"2.8.3.2 In assigning the packing group in accordance with 2.8.2.3, account shall be taken of human experience in instances of accidental exposure. In the absence of human experience the grouping shall be based on data obtained from experiments in accordance with OECD Test Guideline 404[1], ~~or~~ 435[2] ***or 431[34]. If it is not possible to discriminate between packing groups II and III in TG 431, packing group II can be applied.*** A substance or mixture which is determined not to be corrosive in accordance with OECD Test Guideline 430[3] ~~[4]~~ ~~or 431[4]~~ may be considered not to be corrosive to skin for the purposes of these Regulations without further testing.

[1] OECD Guideline for the testing of chemicals No. 404 "Acute Dermal Irritation/Corrosion" 2015

[2] OECD Guideline for the testing of chemicals No. 435 "In Vitro Membrane Barrier Test Method for Skin Corrosion" 2015

[3] OECD Guideline for the testing of chemicals No. 431 "In Vitro Skin Corrosion: reconstructed human epidermis (RHE) test method" 2016

[34] *OECD Guideline for the testing of chemicals No. 430 "In Vitro Skin Corrosion: Transcutaneous Electrical Resistance Test (TER)" 2015*

~~*[4] OECD Guideline for the testing of chemicals No. 431 "In Vitro Skin Corrosion: Human Skin Model Test" 2015*~~".

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Item 6 (d) of the provisional agenda
Miscellaneous proposals for amendments to the Model Regulations on the Transport of Dangerous Goods: other miscellaneous proposals

Deletion of expired portable tank instructions

Transmitted by the expert from Germany*

Introduction

1. Portable tank instruction TP35 contains a transitional provision which expired on 31 December 2014 and TP37 contains a transitional provision which expired on 31 December 2016. Both portable tank instructions can be deleted.

3. The transitional provisions in TP38 and TP39 will expire on 31 December 2018 and can be also deleted in the twenty-first edition of the UN Model regulations.

Proposals

4. Amend the dangerous goods list as follows:

For UN Nos 1092, 1098, 1143, 1163, 1238, 1239, 1244, 1595, 1695, 1752, 1809, 2334, 2337, 2646 and 3023, in column 11 delete TP35.

For UN Nos 1135, 1182, 1251, 1541, 1580, 1605, 1670, 1810, 1834, 1838, 1892, 2232, 2382, 2474, 2477, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2521, 2605, 2644, 2668, 3079 and 3246, in column 11 delete TP37

For UN 3148, in column 11 delete TP38.

For UN 2381, in column 11 delete TP39.

5. Sub-section 4.2.5.3: Replace the text of TP33, TP37, TP38 and TP38 with "*Deleted.*".

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* In accordance with the programme of work of the Sub-Committee for 2017–2018 approved by the Committee at its eighth session (see ST/SG/AC.10/C.3/100, paragraph 98 and ST/SG/AC.10/44, para. 14).

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Item 6 (b) of the provisional agenda
Miscellaneous proposals for amendments to the Model Regulations on the Transport of Dangerous Goods: packagings

Aluminium drums

Transmitted by the expert from Italy*

Introduction

1. Among the requirements for **Steel or aluminium jerricans** (3A1 steel, non-removable head 3A2 steel, removable head, 3B1 aluminium, non-removable head 3B2 aluminium, removable head) laid down in section 6.1.4.4, is clearly highlighted the compatibility of the material (steel or aluminium) with the content to be carried and if it is the case, the need for protective coating:

> *"6.1.4.4.4 If materials used for body, heads, closures and fittings are not in themselves compatible with the contents to be transported, suitable internal protective coatings or treatments shall be applied. These coatings or treatments shall retain their protective properties under normal conditions of transport."*

2. The text is available also for **Steel drums** under the section 6.1.4.1 (see 6.1.4.1.7).

3. On the other hand the requirements for **Aluminium drums** as referred to in 6.1.4.2 seem to be lacking on this matter, despite the fact that aluminium is sensitive to the problem of corrosion (e.g. sodium hydroxide solution, or alkaline liquids etc.).

* In accordance with the programme of work of the Sub-Committee for 2017–2018 approved by the Committee at its eighth session (see ST/SG/AC.10/C.3/100, paragraph 98 and ST/SG/AC.10/44, para. 14).

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1804983

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Conclusion

4. The Sub-Committee is invited to consider the following proposal in order to remove a deficiency of the text and to achieve better harmonization between the requirements laid down in the Model Regulations.

Proposal

5. The following text is proposed to be inserted in the section 6.1.4.2:

[6.1.4.2.6] If materials used for body, heads, closures and fittings are not in themselves compatible with the contents to be transported, suitable internal protective coatings or treatments shall be applied. These coatings or treatments shall retain their protective properties under normal conditions of transport.